

Claims

[c1] We claim:

1.A downhole sampling tool positionable in a wellbore penetrating a subterranean formation, the subterranean formation having a formation fluid therein, the wellbore having a contaminated fluid therein extending into an invaded zone about the wellbore, comprising:
a housing;
a shaft extendable from the housing, the shaft positionable in a perforation in a sidewall of the wellbore;
at least one flowline extending through the shaft and into the housing, the at least one flowline adapted to receive downhole fluids through the perforation;
at least one fluid restrictor positioned about the perforation, the at least one fluid restrictor adapted to isolate at least a portion of the perforation whereby contaminated fluid is prevented from entering the isolated portion of the perforation.

[c2] 2.The sampling tool of claim 1 further comprising at least one sensor positioned about one of the shaft, the housing and combinations thereof, the sensor adapted to take downhole measurements.

- [c3] 3.The sampling tool of claim 1 wherein the at least one fluid restrictor is at least one packer inflatable about one of the shaft, the perforation and combinations thereof.
- [c4] 4.The sampling tool of claim 3 wherein at least one flow-line is a sampling flowline having an opening positioned adjacent the distal end of the shaft beyond the at least one packer.
- [c5] 5.The sampling tool of claim 4 wherein at least one flow-line is a cleanup flowline, the cleanup flowline having an opening positioned a distance from the distal end of the shaft and the opening of the sampling flowline.
- [c6] 6.The sampling tool of claim 5 wherein the at least one packer is positioned along the shaft between the opening of the cleanup flowline and the housing.
- [c7] 7.The sampling tool of claim 3 wherein at least one packer is positioned adjacent the housing to isolate the perforation from wellbore fluids.
- [c8] 8.The sampling tool of claim 1 wherein the fluid restrictor is a flow inhibitor disposed in the perforation about the shaft, the flow inhibitor adapted to isolate at least a portion of the perforation about at least a portion of one of the shaft, the housing and combinations thereof.

- [c9] 9.The sampling tool of claim 1 wherein at least one flow-line is a cleanup flowline, the cleanup flowline adapted to receive downhole fluids through the perforation.
- [c10] 10.The sampling tool of claim 9 wherein the cleanup flowline extends through at least a portion of the shaft.
- [c11] 11.The sampling tool of claim 9 wherein the cleanup flowline is positioned in the housing adjacent the shaft.
- [c12] 12.The sampling tool of claim 9 further comprising a tubular portion disposed about the shaft, the cleanup flowline positioned in the tubular portion.
- [c13] 13.The sampling tool of claim 12 wherein the cleanup flowline has at least one opening extending through the tubular portion.
- [c14] 14.The sampling tool of claim 12 wherein the tubular portion is extendable and retractable about the tubular shaft.
- [c15] 15.The sampling tool of claim 1 further comprising a bit at a distal end of the shaft, the bit adapted to penetrate the sidewall of the wellbore to create the perforation.
- [c16] 16.The sampling tool of claim 15 wherein the bit is adapted to penetrate one of casing, cement, mudcake,

formation and combinations thereof.

- [c17] 17.The sampling tool of claim 1 wherein the fluid restrictor is a fluid injected into the formation about the perforation, the fluid adapted to penetrate the formation and create a seal about at least a portion of the perforation.
- [c18] 18.The sampling tool of claim 1 further comprising a fluid analyzer operatively connected to one of the flowline for analyzing contamination in the flowline.
- [c19] 19.The sampling tool of claim 1 further comprising a perforator adapted to create the perforation in the sidewall of the wellbore.
- [c20] 20.The sampling tool of claim 19 wherein the perforator is integral with the shaft.
- [c21] 21.The sampling tool of claim 19 wherein the perforator is separate from the shaft.
- [c22] 22.The sampling tool of claim 1 further comprising at least one sample chamber operatively connected to the at least one flowline.
- [c23] 23.The sampling tool of claim 1 further comprising an outlet operatively connected to the at least one flowline.

- [c24] 24.The sampling tool of claim 1 further comprising at least one pump for drawing fluid into the at least one flowline.
- [c25] 25.A method of sampling a fluid from a subterranean formation penetrated by a wellbore, the subterranean formation having a formation fluid therein, the wellbore having a contaminated fluid therein extending into an invaded zone about the wellbore, comprising:
inserting a shaft into a perforation in a sidewall of a wellbore, the shaft having at least one flowline with an opening extending therethrough;
positioning at least one fluid restrictor about the perforation to isolate at least a portion of the perforation;
selectively drawing downhole fluid from the perforation into the downhole tool via the at least one flowline.
- [c26] 26.The method of claim 25 wherein the at least one fluid restrictor is at least one packer, the step of positioning comprising inflating the at least one packer about the shaft to isolate at least a portion of the perforation.
- [c27] 27.The method of claim 25 wherein the at least one flowline is at least one sampling flowline and at least one cleanup flowline.
- [c28] 28.The method of claim 27 further comprising isolating

the fluid flowing into the sampling flowline from fluid flowing into the cleanup flowline.

- [c29] 29.The method of claim 27 further comprising extending a tube into the perforation about the shaft, the cleanup flowline positioned in the tube.
- [c30] 30.The method of claim 27 wherein fluid is selectively drawn into one of the sampling flowline, the cleanup flowline and combinations thereof via at least one pump.
- [c31] 31.The method of claim 25 wherein the fluid restrictor is a flow inhibitor.
- [c32] 32.The method of claim 25 further comprising injecting a fluid into the perforation, the fluid adapted to seal a portion of the perforation from fluid flow.
- [c33] 33.The method of claim 25 further comprising perforating the sidewall of the wellbore.
- [c34] 34.The method of claim 33 wherein the perforation is created by extending the shaft through the sidewall of the wellbore, the shaft provided with a bit at an end thereof.
- [c35] 35.The method of claim 33 wherein the perforation is created through one of casing, cement, mudcake, formation and combinations thereof.

- [c36] 36.The method of claim 33 wherein the step of inserting and the step of perforating is performed simultaneously.
- [c37] 37.The method of claim 33 wherein the step of inserting and the step of perforating are performed separately.
- [c38] 38.The method of claim 25 further comprising selectively diverting fluid from the flowlines into one of a sample chamber in the downhole tool, the wellbore and combinations thereof.
- [c39] 39.A probe for sampling formation fluid, the probe disposed in a downhole tool positioned in a wellbore penetrating a subterranean formation, the subterranean formation having a formation fluid therein, the wellbore having a contaminated fluid therein extending into an invaded zone about the wellbore, comprising:
a shaft extendable from the downhole tool, the shaft positionable in a perforation in a sidewall of the wellbore;
at least one flowline extending through the shaft, the at least one flowline adapted to receive downhole fluids;
and
at least one packer disposed about the shaft, the at least one packer expandable to isolate at least a portion of the perforation whereby the contaminated fluid is prevented from entering the isolated portion of the perforation.

- [c40] 40.The probe of claim 39 wherein the at least one flowline comprises at least one sampling flowline and at least one cleanup flowline.
- [c41] 41.The probe of claim 40 wherein the sampling flowline is positioned about a distal end of the shaft and the cleanup flowline is positioned a distance from the distal end of the shaft.
- [c42] 42.The probe of claim 40 wherein an opening of the at least one flowline is positioned in the portion of the perforation isolated by the at least one packer.
- [c43] 43.The probe of claim 40 wherein the at least one packer is positioned between the sampling and cleanup flowlines.
- [c44] 44.The probe of claim 40 further comprising a tubular portion disposed about the shaft, the cleanup flowline disposed in the tubular portion.
- [c45] 45.The probe of claim 39 further comprising a bit at the distal end of the shaft, the bit adapted to penetrate the sidewall of the wellbore to create the perforation.
- [c46] The probe of claim 39 wherein the at least one packer is positioned about an opening of the perforation.